File No.: 12676-15US-1 KPM/en

Montreal, Canada
March 18, 2002

IN THE UNITED STATES PATENT AND TRADEMARKS OFFICE

In re Application of

Yassin M. Elgarhy

For: Polyamide Fiber Substrate Having Stain Resistance, Composition and Method

S.N.: Unknown (Continuation of USSN 09/465,265, filed December 17, 1999)

U.S. Patent and Trademark Office
Washington, D.C. 20231
U.S.A.

PRELIMINARY AMENDMENT

Sir:

Please amend the application as follows prior to calculating the official fees.

IN THE SPECIFICATION:

The first paragraph at page 2 is amended to show the continuation status.

There is attached a sheet containing a new first paragraph to be introduced prior to the existing first paragraph at page 2.

Please amend the original second full paragraph of the original specification of page 2, as amended by the Examiner in the parent application, to correct the spelling of the first named inventor of U,S. Patent 4,780,099.

There is attached an annotated copy of the paragraph showing the amendment and a clean copy.

The Assistant Commissioner for Patents

Please correct the typographical error in the identification of the U.S. Patent in the paragraph bridging pages 3 and 4 of the specification, which number was corrected by the Examiner in the parent application.

An annotated sheet showing the correction and a clean sheet with the paragraph is attached.

IN THE CLAIMS

Please cancel claims 1 to 14.

Please amend claims 18, 22 and 25 to correct their dependencies as in the parent application.

Please insert in the application claims 32 and 33.

There is attached an annotated copy of the claims and a clean copy of the claims following entry of the present amendment.

REMARKS

Claims 15 to 33 are in the case.

The error in the spelling of the name of inventor Greschler on original page 2 has been corrected consistent with the correction made by the Examiner in the parent application.

The error in the Patent No. at page 3 has been corrected consistent with the amendment made in the parent application.

The Assistant Commissioner for Patents

Claims 1 to 14, which are the subject of the allowed parent application, have been cancelled.

Errors in the dependencies of original claims 18, 22 and 25 have been corrected as in the parent application. In particular, claim 18 has been amended to refer to claim 15; claim 22 has been amended to refer to claim 20 and claim 25 has been amended to refer to claim 24.

New claim 32 is presented which depends from claim 15 and further defines the semi-soluble methacrylic acid polymer as in allowed claim 1 of the parent application.

New claim 33 depends from claim 20 and further defines the ethyl methacrylate polymer as in claim 3 of the allowed application.

Favorable consideration of the application is requested.

Respectfully,

Kevin P. Murphy
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Date: March 18, 2002

Encls.

Annotated First Paragraph of Page 2

CROSS-REFERENCE TO RELATED APPLICATION

This application is a Continuation of USSN 09/465,265, filed December 17, 1999 and allowed February 7, 2002.

Annotated Second Paragraph of Page 2

ii) Description of Prior Art

Fibrous polyamide substrates, such as nylon carpeting and similar wool substrates are susceptible to staining by both naturally occurring and commercial acid colorants found in many common foods and beverages. The demand for reduced staining from such acid colorants has by and large been met by treatment with compositions comprising sulfonated naphthol or sulfonated phenol-formaldehyde condensation products as disclosed for example in the following patents: US Patent 4,501,591 Ucci and Blyth; US Patent 4,592,940 Blyth and Ucci; US Patent 4,680,212 Blyth and Ucci; US Patent 4,780,099 [Creshler] Greshler, Malone and Zinnato; US Patent 4,865,885 Herlant and Al; or by treatment with compositions comprising sulfonated novolak resins together with polymethacrylic acid as disclosed in US Patent 4,822,373 Olson, Chang and Muggli.

Annotatated Paragraph Bridging Pages 3 and 4

The addition of a methacrylic resin in the form of methacrylic polymers and/or copolymers to the previously mentioned condensation products (novolak resin) as disclosed in US Patent [4,833,473] 4,223,473 (Olson, Chang and Muggli) allows the use of a novolak resin in smaller quantities with larger quantities of the methacrylic resin. With this combination of novolak resin and methacrylic resin, a major improvement in the light fastness or less discoloration is achieved due to the dramatically reduced percentage of novolak resin in the product mentioned above, which is adjusted to obtain a desired low level of discoloration while maintaining an acceptable level of durability to wash. The high level of initial stain resistance is

supplied primarily by the methacrylic resin and after wet cleaning the stain resistance is supposedly maintained by the novolak resin, the methacrylic resin having largely been removed during the wet cleaning process.

EP 0 905 564 A1

Amended Clean First Paragraph of Page 2

CROSS-REFERENCE TO RELATED APPLICATION

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Clean Second Paragraph of Page 2

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the methacrylic resin and after wet cleaning the stain resistance is supposedly maintained by the novolak resin, the methacrylic resin having largely been removed during the wet cleaning process.

EP 0 565 756 A1

Annotated Claims 1 to 33

1. (cancelled) A fibrous polyamide substrate having resistance to staining by acid colorants comprising:

a fibrous polyamide substrate having applied thereto a semi-bleached to bleached sulfonated aromatic condensation resin, said resin being selected from the group consisting of condensation products of:

i) phenolsulfonic acid, dihydroxydiphenyl sulfone and an aldehyde;

ii) sulfonated dihydroxydiphenylsulfone, dihydroxydiphenyl sulfone and an aldehyde;

iii) sulfonated dihydroxy diphenyl sulfone and an aldehyde; and

iv) mixtures of i) ii) and iii).

2. (cancelled) A substrate according to claim 1, having further applied thereto a semi-soluble methacrylic acid polymer of high weight average molecular weight and high number average molecular weight.

3. (cancelled) A substrate according to claim 2, having further applied thereto a semi soluble or insoluble ethyl methacrylate polymer.

4. (cancelled) A substrate according to claim 1, wherein said resin is a condensation product of 4,4-dihydroxy diphenyl sulfone, sulfonated 4,4-dihydroxy diphenyl sulfone and an aldehyde.

5. (cancelled) A substrate according to claim 1, wherein said resin is a condensation product of phenol sulfonic acid, 4,4-dihydroxy diphenyl sulfone and an aldehyde.

6. (cancelled) A substrate according to claim 1, wherein said resin is a condensation product of sulfonated 4,4-dihydroxydiphenylsulfone and an aldehyde.

7. (cancelled) A substrate according to claim 2, wherein said polymer is a copolymer of methacrylic acid and a comonomer selected from one or more of the following comonomers 2-ethyl hexyl methacrylate, ethyl methacrylate, ethyl acrylate, methyl methacrylate, butyl methacrylate or isobutyl methacrylate.

8. (cancelled) A substrate according to claim 3, wherein said polymer is an ethyl methacrylate copolymer or homopolymer.

9. (cancelled) A substrate according to claim 3, wherein said polymer is a copolymer of ethyl methacrylate and one or more of the following comonomers: ethyl acrylate, 2 ethyl hexyl methacrylate, butyl methacrylate, methyl methacrylate or isobutyl methacrylate.

10. (cancelled) A substrate according to claim 2, wherein said polymer is a copolymer or homopolymer of methacrylic acid having a weight average molecular weight of 100,000 to 500,000 and a number average molecular weight of 50,000 to 100,000.

11. (cancelled) A substrate according to claim 10, wherein said polymer has a number average molecular weight of 60,000 to 75,000.

12. (cancelled) A substrate according to claim 1, wherein the semi-bleached to bleached resin is formed by treating the resin with sodium formaldehyde sulfoxylate or zinc formaldehyde sulfoxylate.

13. (cancelled) A substrate according to claim 1, additionally having applied thereto an anionic or non-ionic fluorochemical.

14. (cancelled) A substrate according to claim 1, additionally having applied thereto a bleached aldehyde condensate of a naphthalene sulfonic acid.

Annotated Claims 18, 22 and 25 & New Claims 32 and 33

18. (amended) A formulation according to claim [14] 15, wherein said resin is a condensation product of sulfonated 3,3-dihydroxydiphenylsulfone and an aldehyde.

22. (amended) A formulation according to claim [17] 20, wherein said ethylmethacrylate polymer has a weight average molecular weight of 100,000 to 500,000; and a number average molecular weight of 25,000 to 100,000.

25. (amended) A method according to claim [20] 24, wherein said substrate is a polyamide substrate and said aqueous vehicle further contains a semi-soluble methacrylic acid polymer having a weight average molecular weight of 100,000 to 500,000 and a number average molecular weight of 50,000 to 100,000

32. (new) An aqueous formulation according to claim 15 wherein said semi-soluble methacrylic acid polymer has a weight average molecular weight of 100,000 to 500,000 and a number average molecular weight of 50,000 to 100,000, said methacrylic acid polymer being semi-soluble such that it is rendered resistant to wet cleaning processes thereby producing durable stain resistance, while providing initial stain resistance prior to wet cleaning of the substrate.

33. (new) An aqueous formulation according to claim 20 wherein said ethyl methacrylate polymer has a weight average molecular weight of 100,000 to 500,000 and a number average molecular weight of 25,000 to 100,000, said ethyl methacrylate polymer being semi-soluble or insoluble such that it is rendered resistant to wet cleaning processes thereby.

Clean Claims 15 to 33

15. An aqueous formulation for providing resistance to staining by acid colorants in a fibrous polyamide substrate comprising in an aqueous vehicle:

a) a semi-bleached to bleached sulfonated aromatic condensation resin, said resin being selected from the group consisting of condensation products of

i) phenolsulfonic acid, dihydroxydiphenyl sulfone and an aldehyde;

ii) sulfonated dihydroxydiphenylsulfone, dihydroxy-diphenyl sulfone and an aldehyde;

iii) sulfonated dihydroxy diphenyl sulfone and an aldehyde; and

iv) mixtures of i), ii) and ii); and

b) a semi-soluble methacrylic acid polymer of high weight average molecular weight and high number average molecular weight.

16. A formulation according to claim 15, wherein said resin is a condensation product of 4,4-dihydroxydiphenylsulfone, sulfonated 4,4-dihydroxydiphenylsulfone and an aldehyde.

17. A formulation according to claim 15, wherein said resin is a condensation product of phenol sulfonic acid, 4,4-dihydroxy diphenyl sulfone and an aldehyde.

18. A formulation according to claim 15, wherein said resin is a condensation product of sulfonated 3,3-dihydroxydiphenylsulfone and an aldehyde.

19. A formulation according to claim 15, wherein said weight average molecular weight is 100,000 to 500,000 and said number average molecular weight is 50,000 to 100,000.

20. A formulation according to claim 19, wherein said aqueous vehicle further contains a semi-soluble or insoluble ethylmethacrylate polymer.

21. A formulation according to claim 19, wherein said aqueous vehicle further contains an anionic or non-ionic fluorochemical.

22. A formulation according to claim 20, wherein said ethylmethacrylate polymer has a weight average molecular weight of 100,000 to 500,000; and a number average molecular weight of 25,000 to 100,000.

23. A formulation according to claim 15, additionally containing a bleached aldehyde condensate of a naphthalene sulfonic acid.

24. A method of imparting stain resistance to acid colorants, to a fibrous polyamide or wool substrate comprising:

contacting said fibrous polyamide substrate with a semi-bleached to bleached sulfonated aromatic condensation resin in an aqueous vehicle, said resin being selected from the group consisting of condensation products of:

i) phenolsulfonic acid, dihydroxydiphenyl sulfone and an aldehyde;

ii) sulfonated dihydroxydiphenylsulfone, dihydroxydiphenyl sulfone and an aldehyde;

iii) sulfonated dihydroxy diphenyl sulfone and an aldehyde; and

iv) mixtures of i), ii) and iii).

25. A method according to claim 24, wherein said substrate is a polyamide substrate and said aqueous vehicle further contains a semi-soluble methacrylic acid polymer having a weight average molecular weight of 100,000 to 500,000 and a number average molecular weight of 50,000 to 100,000.

26. A method according to claim 25, wherein said vehicle further contains a semi-soluble or insoluble ethylmethacrylate polymer having a weight average molecular weight of 100,000 to 500,000 and a number average molecular weight of 25,000 to 100,000.

27. A method according to claim 26, wherein said vehicle further contains an anionic or non-ionic fluorochemical.

28. A method according to claim 24, wherein said resin is a condensation product of 4,4-dihydro diphenyl sulfone, sulfonated 4,4-dihydroxy diphenyl sulfone and an aldehyde.

29. A method according to claim 24, wherein said resin is a condensation product of phenol sulfonic acid, 4,4-dihydroxy diphenyl sulfone and an aldehyde.

30. A method according to claim 24, wherein said resin is a condensation product of sulfonated 4,4-dihydroxydiphenylsulfone and an aldehyde.

31. A method according to claim 24, wherein said substrate is a wool substrate

32. An aqueous formulation according to claim 15 wherein said semi-soluble methacrylic acid polymer has a weight average molecular weight of 100,000 to 500,000 and a number average molecular weight of 50,000 to 100,000, said methacrylic acid polymer being semi-soluble such that it is rendered resistant to wet cleaning processes thereby producing durable stain resistance, while providing initial stain resistance prior to wet cleaning of the substrate.

33. An aqueous formulation according to claim 20 wherein said ethyl methacrylate polymer has a weight average molecular weight of 100,000 to 500,000 and a number average molecular weight of 25,000 to 100,000, said ethyl methacrylate polymer being semi-soluble or insoluble such that it is rendered resistant to wet cleaning processes thereby.